11 Abstract

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Title of Thesis: The effect of pyrazine derivatives on secondary metabolites in *in vitro cultures.*

This thesis investigates the effect of new synthetic pyrazine derivatives as potential elicitors on rutin production in callus and suspension cultures of *Fagopyrum esculentum*, var. Bambi. All tested chemical elicitors increased the production of rutin in both callus and suspension cultures.

Callus and suspension culture was cultivated in Murashige and Skoog nutrient medium containing growth regulator (2,4-D) under the specified temperature and light conditions. The samples were taken in 6, 12, 24, 48, 72 and 168 hours after elicitor exposition, control samples were taken in 24 and 168 hours after exposition. The determination of the rutin content was performed by high performance liquid chromatography (HPLC).

Elicitor P.G.R.1, propyl 5-(3-(4.chlorophenyl)ureido)pyrazine-2-carboxylate showed the highest increase in rutin production after 12 hours treatment in the callus culture, whereas the highest increase in rutin content was recorded after 24 hours elicitor application in the suspension culture. Statistically significant rutin content was also measured 72 hours after the elicitor application in suspension culture.

Elicitor P.G.R.2, 1-(4-chlorophenyl)-3-(pyrazin-2-yl)urea caused the highest increase in rutin production 6 hours after treatment of this elicitor in both types of callus and suspension cultures.

Elicitor P.G.R.3, 3-(3-(4-chlorophenyl)ureido)pyrazine-2-carboxylic acid increased rutin production in callus culture 6 hours after elicitor application.

In suspension culture there the highest increase of rutin content was also found after 6 hours of P.G.R.3 treatment, where the statistically significant value were measured similarly to the P.G.R.1 72 hours after treatment, compared to the control sample.